THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method of predicting motion vectors associated with a block of pixels of a picture to be included in a data stream for differential motion vector coding of a video signal, said method comprising the steps of

a) organising a set of reference pictures in to a pair of lists and according to each reference picture within said lists at least one reference index,

b) associating with selected ones of said blocks in said video signal at least one motion vector that references a respective one of said lists, with each vector associated with a selected one of the blocks referencing a different list, each of which vectors defines dispositon of said block relative to a reference picture in the respective one of said lists, and

c) computing a predicted value for each of said vectors from vectors of adjacent blocks referencing the same list as the vector being computed, whereby, the prediction of a motion vector that selects a reference picture using a certain list of pictures is not dependent upon the motion vectors whose reference pictures are selected using the other list of reference pictures.

2. The method of claim 1 wherein said computation utilises the values of spatially neighbouring motion vectors that use the same list of reference pictures as the motion vector being predicted, regardless of the relative temporal direction of the reference pictures selected for the current and neighbouring motion vectors.

3. A method according to claim 1, wherein the motion-compensation-based video coder supports a plurality of block partition sizes for performing motion compensation.

4. A method of motion vector prediction according to claim 3, wherein the block partition sizes for motion compensation include partitions of 16x16, 16x8, 8x16, 8x8, 8x4, 4x8, and 4x4 luminance samples.

5. A method according to claim 1, wherein said motion vectors may be computed using one of a plurality of predefined computation strategies.

6. A method according to claim 5, wherein a first of said strategies utilises a motion vector from a single neighbouring block that uses the same list as the motion vector being predicted.

7. A method according to claim 6, wherein said first strategy is applied only when the partition size of the block for which the motion vector is being predicted is 16x8 or 8x16 luminance samples.

8. A method of motion vector prediction according to claim 7, wherein if the current motion vector applies to the top half of a 16x8 partitioned macroblock and the block immediately above the current block in the picture contains a motion vector that uses the same reference picture list and reference index as the current motion vector, the predicted motion vector is set equal to the motion vector value that uses the same reference picture list in the block immediately above.

9. A method of motion vector prediction according to claim 7, wherein if the current motion vector applies to the bottom half of a 16x8 partitioned macroblock and the block immediately left of the current block contains a motion vector that uses the same reference picture list and reference index as the current motion vector, the predicted motion vector is set equal to the motion vector value that uses the same reference picture list in the block immediately left of the current block.

10. A method of motion vector prediction according to claim 7, wherein if the current motion vector applies to the left half of an 8x16 partitioned macroblock and the block immediately left contains a motion vector that uses the same reference picture list and reference index as the current motion vector, the predicted motion vector is set equal to the motion vector value that uses the same reference picture list in the block immediately left.

11. A method of motion vector prediction according to claim 7, wherein if the current motion vector applies to the right half of an 8x16 partitioned macroblock, and the block above and to the right of the current block is available, and the above-right block contains a motion vector that uses the same reference picture list and reference index as the current motion vector, the predicted motion vector is set equal to the motion vector value that uses the same reference picture list in the block above and to the right of the current block.

12. method of motion vector prediction according to claim 7, wherein if the current motion vector applies to the right half of an 8x16 partitioned macroblock, and the block immediately above and to the right is not available but the block above and to the left is available, and the block above and to the left contains a motion vector that uses the same reference picture list and reference index as the current motion vector, the predicted motion vector is set equal to the motion vector value that uses the same reference picture list in the block above and to the left.

13. A method of motion vector prediction according to claim 5, wherein a second computation strategy selects motion vectors from up to three neighbouring blocks.

14. A method according to claim 13 wherein said three neighbouring blocks are the block to the left of the current block, the block above the current block, and the block above and to the right of the current block.

15. A method according to claim 14 wherein if the block above and to the right is not available then the block above and to the left is used, if available.

16. A method of motion vector prediction according to claim 13, wherein if no motion vector using the same reference picture list is available in one of said neighbouring blocks, a zero-valued motion vector, (0,0), is used in place of the motion vector from that block.

17. A method of motion vector prediction according to claim 13, wherein in the case that the blocks above, above and to the left, and above and to the right of the current block are not available within the same picture or slice as the current block, and the block to the left of the current block is available, a predicted motion vector equal to the motion vector used for the block to the left of the current block is utilised

18. A method of motion vector prediction according to claim 13, wherein, if the left block is the only available block of the 3 selected neighbouring blocks, and if one and only one of the three selected neighbouring blocks contains a motion vector that uses the same reference picture list as the block being predicted and uses a reference index equal to the reference index used for the current block, the predicted motion vector is set equal to the value of said motion vector.

19. A method of motion vector prediction according to claim 13 wherein if the predicted motion vector has not been computed according to the conditions of either of claims 17 or claim 18 then the predicted motion vector is computed by taking a component-wise median of the 3 neighbouring motion vectors.

20. A method of motion vector prediction according to claim 19, wherein if no motion vector using the same reference picture list is available in one of said neighbouring blocks, a zero-valued motion vector, (0,0), is used in place of the motion vector from that block.